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(54) FOODSTUFFS FOR AQUATIC ANIMALS SUCH AS FISH

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5 Chung, Lu Chou Hsiang, Taipei Haien, Taiwan, both citizens of Taiwan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to foodstuffs for aquatic animals such as fish.

Existing methods of feeding fish in
15 aquarium tanks comprise scattering feed particles, mostly buoyant, upon the water, setting trays of feed material in the water, or directly adhesively attaching a solid cube or tablet of feed material to the inner wall
20 of the fish tank. Whichever method is used, all have serious drawbacks in that dissolving and precipitating of residues of the feed material in the water will inevitably occur, thus causing contamination. This fouling
25 is usually fatal to the fish in the tank because the amount of air in the water of the fish tank should be kept relatively constant for proper growing of aquatic animals. Moreover, the main purpose of breeding aquatic
30 animals is aesthetically for exhibition, and once the water is fouled and residues accumulate in the fish tank, the aesthetic factor is seriously affected. Also several feeding periods daily are necessary in the
35 traditional feeding methods. Besides the objection to manual handling of certain foods, constant attendance is required to keep all the fish regularly fed. Some fish, under certain circumstances, may eventually
40 die because of food shortage. In addition, when the density of fish in a certain amount of water increases, the quantity of feed stuffs and the number or feeds daily must be increased proportionally. Thus, the
45 demands for the constant attention and timely replenishment of food impose difficult conditions upon the breeders of aquatic animals today.

As to the effectiveness of feeding by the

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foregoing methods, it is time consuming and very uneconomical. A considerable excess amount of feed stuffs must usually be put in the fish tank because some will eventually dissolve or disperse in water. Moreover, the dissolved portions of the feed stuffs may not be acceptable to the fish because of the change in quality due to added moisture.

Since traditional feeding methods are neither scientific nor economical, raising fish on a large scale by manual feeding involves wasted labour. Today, the raising or aquatic animals for exhibition and decoration has become increasingly popular all over the world.

The major object of the invention is to provide a new form of feedstuff for aquatic animals which overcomes the aforesaid disadvantages.

Accordingly the present invention is a body of food for fish and like aquatic animals in the form of an elongated bar comprising a plurality of spaced sections each having at least one transverse layer of food that is softenable in water, and a relatively harder transverse barrier layer that is only slowly soluble in water disposed between each adjacent section.

According to an embodiment of the invention, which finds particular application when used in association with the automatic feeding device described and claimed in our co-pending Application No. 20043/72 (Serial No. 1,351,877), the composite bar of foodstuff contains at least one additive substance capable of releasing or producing gas when moistened by water.

The present invention is described in more detail with reference to the accompanying drawings which illustrate foodstuff in a form particularly suitable for use with the automatic feeder described and claimed in our co-pending Application No. 22043/72 (Serial No. 1,351,877) and in which:

Figure 1 is an enlarged generally perspective view showing a layered charge of food of preferred composition adapted for insertion into the feeder,

Figure 2 is an enlarged fragmentary view

in section showing another form of layered food charge for a feeder, and

Figure 3 is a plan view partly cut away to further illustrate the composition of the bar of foodstuffs of Figure 2.

Referring to Figure 1, this shows a preferred body of fish food in the form of an elongated composite bar 1 such as may be used in the feeder for insuring a proper or varied diet supplied at timed intervals to the feeding fish. The bar is rectangular in cross section and comprises vertically spaced layered sections of compressed readily softened edible food that may be different or arranged in repeated layer combinations. Preferably the food is of greater density than water. The layers of readily softened food may comprise respectively freeze dried daphnia 2, freeze dried mosquito larvae 3, freeze dried tubifex worms 4, freeze dried brine shrimp 5, a mixture of muscle tissue and viscera of mamalian animals 6 and a chorella additive of freshy worms 7. Several layers are grouped in vertically spaced sections with the spaced groups separated by a hard food layer 8.

The hard layer 8 may have some food value and is advantageously formed of a mixture of gelatin and dried tubifex worms or daphnia with a small amount of sand included. Another composition is a mixture of calcium sulfate with dried daphnia. These hard layers 8 soften and dissolve only very slowly in water, a $\frac{3}{16}$ " layer requiring about 20—22 hours to dissolve, and therefore they slow down or discourage eating. By providing a series of vertically spaced layers of this hard food in each bar 1 whereby the fish, after eating several successive layers of ordinary fish food such as tubifex worms, daphnia and the like, encounter a hard barrier layer 8, effective control and spacing of feeding times is obtained. A single bar of adequate length may thus supply adequate food for at least a week without any care or attention.

A preferred form of bar 1¹ is shown in detail in Figures 2 and 3. This bar is similar to bar 1 in that it comprises layer sections 9 of readily softened edible food vertically spaced by hard highly congealed food layer sections 10. The layer sections 9 may be multilayered, for example consisting of different food value layers such as

layers 5, 6 and 7 in bar 1, or they may be homogeneous single food layers. The hard layer sections 10 are preferably of the same composition as hard layers 8 of bar 1. As in bar 1, the adjacent relatively soft and hard layer sections have their coextensive interfaces bonded together adhesively, either by the natural adhesives of the compressed foods or added vegetable type adhesives if required.

Bar 1¹ differs from bar 1 essentially only in that a body 11 of pressurized gas producing additive is disposed at each hard food layer 10, preferably near the interface with the soft layer above it although exact location is not critical to that extent.

Preferably these bodies 11 are composed of sodium bicarbonate, sodium tartrate, sodium DL-tartrate, citric acid and equivalent materials that react with water to produce the gas.

WHAT WE CLAIM IS:—

1. A body of food for fish and like aquatic animals in the form of an elongated bar comprising a plurality of spaced sections each having at least one transverse layer of food that is softenable in water, and a relatively harder transverse barrier layer that is only slowly soluble in water disposed between each adjacent section.

2. The body of food defined in claim 1, wherein each section consists of a plurality of different food layers.

3. The body of food defined in claims 1 or 2, wherein spaced bodies of gas releasing or producing material are distributed along said body.

4. The body of food defined in claim 3, wherein said bodies are incorporated at each relatively harder barrier layer.

5. The body of food defined in claims 3 or 4 wherein said bodies comprise sodium bicarbonate, sodium tartrate, sodium DL-tartrate and citric acid.

6. A body of food for fish and like aquatic animals substantially as hereinbefore described with reference to the accompanying drawings.

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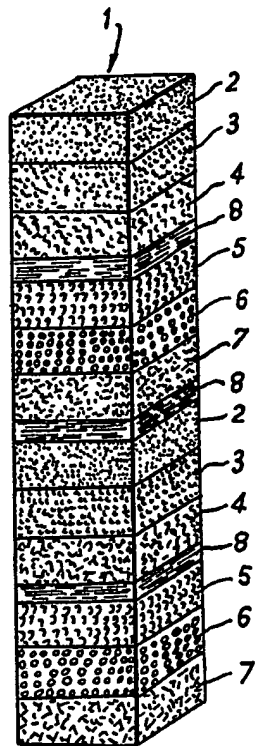


FIG. 1

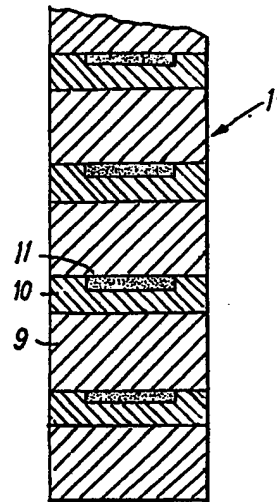


FIG. 2

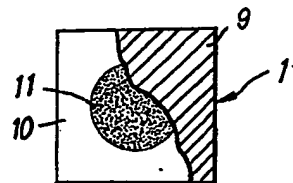


FIG. 3